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Toward a Fluid Global Market: A Guide to Understanding the Changing State of U.S. Liquefied Natural Gas Exports, Regulatory Procedures, and Stakeholder Interests

Brandon J. Pierce Esq.

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INTRODUCTION

The close of 2014 ended a lively and prodigious year for energy. This follows $1.6 trillion in energy investments "to provide the world's consumers with energy" in 2013[1]—a year in which energy production and consumption levels reached "record levels for every fuel type except nuclear power."[2] While the 2014 statistics had yet to be released at the time this article was completed, those in the energy field and observers alike undoubtedly saw 2014 as yet another instance of energy bolstering its status as one of the preeminent global issues of the 21st century.

The natural gas sector—and liquefied natural gas (LNG) particularly—saw significant movement in 2014. In fact, long-term global growth is expected on the order of up to $500 billion in LNG development by 2025.[3] The United States is seeing a considerable portion of this development due to massive underground natural gas reserves that have been unlocked through multi-directional drilling and hydraulic fracturing, which has opened the door to natural gas

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* Mr. Pierce is Editor-in-Chief for the Pennsylvania Bar Association Environmental & Energy Law Section Newsletter (PBA EELS) and an Assistant Consumer Advocate in the Pennsylvania Office of Consumer Advocate (OCA). *Material in this article is not intended to represent the views of the PBA EELS or the OCA.* Mr. Pierce was formerly the Judicial Law Clerk to the Honorable John W. Thompson, Jr., and a Fellow at the U.S. Army Peacekeeping & Stability Operations Institute at the U.S. Army War College. He graduated *cum laude* from Widener Law and from Bucknell University. See Mr. Pierce's full biography at https://www.linkedin.com/in/brandonjpierce.

1. That number has more than doubled in real terms since 2000. *Special Report: World Energy Investment Outlook*, INT'L ENERGY AGENCY 11 (June 3, 2014), http://www.iea.org/publications/freepublications/publication/WEIO2014.pdf, archived at http://perma.cc/2GJP-XXS2.

2. *BP Statistical Review of World Energy June 2014*, BP 2 (June 2014), http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2014/BP-statistical-review-of-world-energy-2014-full-report.pdf, archived at http://perma.cc/K6BF-6V4E. For the most up-to-date statistics *see Statistical Review of World Energy 2014*, BP www.bp.com/statisticalreview (last visited Feb. 5, 2015), archived at http://perma.cc/3QAN-2VVP.

3. *See* DANIEL YERGIN, THE QUEST: ENERGY, SECURITY, AND THE REMAKING OF THE MODERN WORLD 314 (2011).

exports when, only a few years earlier, the United States was projected to be a growing natural gas importer.

The year 2014 was, in a way, the *visible* beginning of a U.S. LNG export transformation—visible in the sense that approvals were granted for, and construction started on, a number of facilities seeking to export LNG produced in the United States.[4] The United States Department of Energy (DOE) and the Federal Energy Regulatory Commission (FERC) authorized four LNG liquefaction and export terminals (at least conditionally) to site, construct, expand, and operate those facilities and export up to several billion cubic feet per day globally. These approvals mark one of the most recent shifts in the U.S. LNG market over the last 50 years, though another wrinkle came to the forefront in the fourth quarter of 2014: oil prices slid to nearly half of their opening value at the beginning of 2014, and in the process, at least partially quelled U.S. LNG export enthusiasm.

This article is a guide to exploring the U.S. LNG liquefaction and export sectors, and specifically, how these sectors progressed over 2014. Part I of this article summarizes the natural gas lifecycle from underground wells to end-users on the opposite side of the globe. Part II then provides a brief history of U.S. LNG imports and exports. Part III outlines the processes necessary to obtain authorizations from the DOE and FERC, which differ depending on where the natural gas originated and its destination.[5] Part IV provides information and statistics regarding four U.S. LNG liquefaction and export projects that received federal approvals in 2014 to site, construct, expand, and operate LNG terminals and export LNG to Free Trade Agreement (FTA) and non-FTA nations. Part V highlights some of the environmental, security, and community concerns that are being considered by stakeholders.

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4. *See North American LNG Import/Export Terminals – Approved*, FERC, http://ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf (last visited Feb. 5, 2015), archived at http://perma.cc/3NG8-2DTT.

5. This article does not discuss state regulatory processes due to variations in their regulatory apparatuses.

I. LNG BASICS

The natural gas lifecycle begins at the wellhead,[6] where the gas is extracted from a subterranean well, and ultimately terminates with the end-user. The gas undergoes any number of intermediate processes that clean, transport, and/or change the phase of the mainly methane-based (CH_4) hydrocarbon compound commonly referred to as "natural gas."

This article picks up the journey of the gas as it enters the LNG liquefaction facility[7] from one of several sources. Those sources include interstate pipelines, storage facilities, or gathering lines from nearby wells. Once inside the liquefaction facility, commonly referred to as a train,[8] the gas is stripped of impurities—as well as water, natural gas liquids, and other petroleum products—if it has not already gone through these processes.[9] The remaining natural gas product is then supercooled to -260^{o} Fahrenheit. The gas undergoes a phase change at this temperature and condenses into a liquid at a ratio of 610:1. In other words, LNG takes up 600 times less space than it does in its gaseous state. This simple physical characteristic is one of the fundamental verities that makes the

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6. The four largest unconventional shale gas plays in the United States, based on 2013 proved reserves are, in order of largest to smallest (in trillion cubic feet or Tcf): Marcellus (64.9 Tcf), Barnett (26 Tcf), Eagle Ford (17.4 Tcf), and Haynesville/Bossier (16.1 Tcf). *Table 4. Principal shale gas plays: natural gas production and proved reserves, 2012-13*, ENERGY INFO. AGENCY, http://www.eia.gov/naturalgas/crudeoilreserves/pdf/table_4.pdf, archived at http://perma.cc/VQ94-GZL3 (last visited Feb. 5, 2015). *See also U.S. Crude Oil and Natural Gas Proved Reserve*, ENERGY INFO. AGENCY (Dec. 19, 2014), http://www.eia.gov/naturalgas/crudeoilreserves/, archived at http://perma.cc/WE3Z-6J7E. Proved reserves are defined as "[e]stimated quantities of energy sources that analysis of geologic and engineering data demonstrates with reasonable certainty are recoverable under existing economic and operating conditions." *Glossary*, ENERGY INFO. AGENCY, http://www.eia.gov/tools/glossary/index.cfm?id=proved (last visited Feb. 5, 2015), archived at http://perma.cc/6UUK-YKGQ.

7. There are a number of liquefaction technologies competing for market share, *e.g.*, cascade refrigeration, U.S. Patent No. 6016665A (filed Jun. 18, 1988); a method of altering the heating value of LNG, U.S. Patent No. 8381544 B2 (filed Jun. 18, 2008); and a process that uses gas expanders and external refrigerant, U.S. Patent No. 8616021 B2 (filed Mar. 4, 2008) (providing a brief description of the "three types of most commonly used [technologies] in LNG plants").

8. Three of the four LNG projects discussed in this article are designed to be multi-train facilities. *See infra* Part IV (discussing these projects in detail).

9. For other examples of the types of treatment that natural gas undergoes as a precursor to the liquefaction process, *see* Heinz Kotzot, et al, *LNG Liquefaction – Not All Plants Are Created Equal*, KBR PS4-1.6, http://www.kbr.com/Newsroom/Publications/Technical-Papers/LNG-Liquefaction-Not-All-Plants-Are-Created-Equal.pdf (last visited Feb. 5, 2015), archived at http://perma.cc/3UZJ-AC3T.

construction and operation of LNG liquefaction and export terminals economically feasible.

Once liquefied, the LNG is moved into storage and then loaded onto one of approximately 385 purpose-built, double-hulled shipping vessels.[10] These LNG tankers have capacities ranging from 3 million cubic feet (84,950 cubic meters) up to 9.4 million cubic feet (266,000 cubic meters) in the largest Q-Max tankers.[11] The LNG can then be shipped to an increasing number of locations worldwide, where it moves through an import terminal and is either stored or re-gasified and transported to end-users.

II. A HISTORY OF THE SHIFTING ECONOMIC REALITIES OF U.S. LNG EXPORTS (AND IMPORTS)

The United States has a history of being a limited exporter of LNG going back to the 1950s, as well as being an importer thereafter. In 1957, the first LNG export destined for Great Britain left from Louisiana.[12] Twelve years later, in 1969, the first LNG export to Japan shipped from Cook Inlet, Alaska.[13] Around the same time, the continental United States was expanding its interstate pipeline system and "[b]y the beginning of the 1970s, natural gas provided fully 25 percent of America's total energy needs."[14]

A domestic natural gas shortage in the winter of 1976-77 led to a surge in utilities contracting for foreign-sourced LNG, as well as the construction of import terminals to receive and re-gasify the imported LNG.[15] A year later, in 1978, the Natural Gas Policy Act became law and deregulated natural gas prices, thus diminishing the economic advantages of imported LNG. Price deregulation, combined with the mandates of the Fuel Use Act of 1978—which prevented natural gas from being used as a fuel source for electricity generation—led to a surge in domestic natural gas

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10. According to Clarksons, there were 385 LNG carriers in service at the beginning of 2014. *Services/Broking/LNG*, CLARKSONS, http://www.clarksons.com/services/broking/lng/, archived at http://perma.cc/R6X6-MMY8 (last visited Feb. 5, 2015). According to Lloyd's Register Marine, there were 387 LNG carriers in service as of December 2013 and 114 on the orderbook. Jim MacDonald, *Growth of the LNG Carrier Fleet 1980 – 2014*, LLOYD'S REGISTER GRP., (Apr. 22, 2014), http://blog.lr.org/2014/04/growth-of-the-lng-carrier-fleet-1980-2014/, archived at http://perma.cc/9PA7-PDJP.

11. *Future Fleet*, QATARGAS, https://www.qatargas.com/English/AboutUs/Pages/FutureFleet.aspx, archived at https://perma.cc/HK35-5VWV (last visited Feb. 5, 2015).

12. YERGIN, *supra* note 3, at 316.

13. *Id.* at 317.

14. *Id.* at 318.

15. *Id.* at 319.

supply.[16] Prices for domestic natural gas dropped as a result and imported LNG became uncompetitive.

In 1987, the portion of the Fuel Use Act prohibiting electricity generators from using natural gas was repealed due to falling demand and prices for natural gas.[17] Due in part to the 1987 repeal, U.S. natural gas consumption had grown rapidly by the mid-1990s; at the same time, domestic production remained flat.[18] These factors led the United States to begin returning to imports as domestic gas prices rose to levels that made LNG competitive again.[19] By 1999, "LNG was starting to flow in growing volumes into the terminal at Everett, near Old Ironsides, across the bay from Boston."[20]

The United States' import capacity continued to grow into the mid-2000s, until the impacts of directional drilling and hydraulic fracturing began to be seen in U.S.-marketed gas production numbers in 2006.[21] The United States' marketed natural gas production has risen every year since then and has once again changed the economic calculus of LNG imports—and with it, exports. LNG liquefaction and export facilities suddenly became an economically feasible endeavor. Some who made multi-billion-dollar import terminal investments looked to salvage value from those projects by leveraging their existing infrastructure to adapt to exporting LNG.[22] The United States is among

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16. *Id.*

17. *Repeal of the Powerplant and Industrial Fuel Use Act (1987)*, ENERGY INFO. AGENCY, http://www.eia.gov/oil_gas/natural_gas/analysis_publications/ngmajorleg/repeal.html, archived at http://perma.cc/Q5CS-RXPX (last visited Feb. 5, 2015) [hereinafter *Repeal of the Powerplant Act*].

18. YERGIN, *supra* note 3, at 319. "Natural gas consumption for electric generation rose from 2.6 trillion cubic feet (Tcf) in 1988 to 5.7 Tcf in 2002, an increase of about 119 percent. Natural gas consumption for industrial processing rose from 6.4 Tcf in 1988 to 7.6 Tcf in 2002, an increase of almost 19 percent." *See also Repeal of the Powerplant Act*, *supra* note 17.

19. Changes in cost structure are also credited with making LNG imports competitive through "simplifying designs and promoting much more competitive bidding." YERGIN, *supra* note 3, at 320.

20. *Id.*

21. *U.S. Natural Gas Marketed Production*, ENERGY INFO. AGENCY, http://www.eia.gov/dnav/ng/hist/n9050us2a.htm (last visited Feb. 5, 2015), archived at http://perma.cc/6PW4-GXQE.

22. Over 50% of capital costs for LNG liquefaction facilities tend to be "beyond the influence of the design engineer and is a function of site related conditions, project development and project execution efforts." Kotzot et al., *supra* note 9, at PS4-1.3. In other words, because import terminal owners and operators were already familiar with site conditions, project development, and project execution, they had the ability to cut costs by applying institutional knowledge, internal data and analytics, and project experience.

> [t]he growing list of LNG suppliers [that] ranges from Malaysia, Indonesia, and Brunei in Asia; to Australia; to Russia (from the island of Sakhalin); to Qatar, Oman, Abu Dhabi, and Yemen in the Middle East; to Algeria, Libya, and Egypt in North Africa, and Nigeria and Equatorial Guinea in West Africa; to Alaska; to Trinidad and Peru in the Western Hemisphere.[23]

Less than ten years later, in the last months of 2014, an oil price crash once again altered the economics of some U.S. LNG export projects.[24] Six months prior, in the beginning of July 2014, West Texas Intermediate (WTI) crude oil contracts traded on the New York Mercantile Exchange (NYMEX) at just over $100 a barrel. At the beginning of October, WTI traded at just under $90 a barrel. By the end of 2014, WTI had lost nearly 50% of its value since July and was trading under $55 a barrel.[25] Brent crude oil contracts, traded on the Intercontinental Exchange (ICE),[26] saw prices similarly tumble over the same interval. Brent prices hovered around $110 a barrel at the beginning of July 2014, just over $95 a barrel at the beginning of October, and just over $57 a barrel at the close of the year.[27]

The price of Brent crude in particular can be relevant to the efficacy of U.S. export projects because LNG from countries such as Qatar and Australia use contracts with prices indexed to Brent crude. Having prices indexed to oil means that those LNG prices are linked to, and follow, oil prices. When oil prices were high, trading at over $100 a barrel, U.S. LNG export contracts—purchased at Henry Hub prices—enjoyed the advantage of being based on low U.S. natural gas pricing that was not tied to oil contracts.[28] And, because oil

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23. YERGIN, *supra* note 3, at 313–14.

24. Oleg Vukmanovic, *Exclusive: Oil price crash claims first U.S. LNG project casualty*, REUTERS (Dec. 30, 2014, 1:21 PM), http://www.reuters.com/article/2014/12/30/us-usa-lng-excelerate-idUSKBN0K81CP20141230, archived at http://perma.cc/CGQ7-8ACR.

25. *See WTI (NYMEX) Price*, NASDAQ, http://www.nasdaq.com/markets/crude-oil.aspx?timeframe=1y, archived at http://perma.cc/4SRE-HVJQ (last visited Feb. 5, 2015).

26. *Intercontinental Exchange*, INTERCONTINENTAL EXCH., https://www.intercontinentalexchange.com/index, archived at https://perma.cc/4AFL-ULFC (last visited Feb. 5, 2015).

27. *See Crude Oil Brent*, NASDAQ, http://www.nasdaq.com/markets/crude-oil-brent.aspx?timeframe=1y, archived at http://perma.cc/G6WX-9KEP (last visited Feb. 5, 2015).

28. *Henry Hub Natural Gas Spot Price*, ENERGY INFO. AGENCY, http://www.eia.gov/dnav/ng/hist/rngwhhdm.htm, archived at http://perma.cc/ MJ2K-9BEL (last visited Feb. 5, 2015). The Henry Hub is "a natural gas pipeline located in Erath, Louisiana that serves as the official delivery location for futures contracts on

prices were generally forecasted to remain high, Asian, Indian, and European buyers were willing to sign long-term firm purchase contracts, usually 20 years in duration.[29]

As oil prices fell precipitously in late 2014,[30] international buyers again began to trend toward oil-linked contracts; the benefits of Henry Hub-priced U.S. natural gas had narrowed or disappeared.

> Prior to the oil price crash, the U.S. discount to rival Brent-linked LNG supply from Qatar and Australia was around $8-$9 per mmBtu. Now those supplies represent a cost saving over U.S. projects.
>
> With U.S. LNG no longer looking to be the cheap LNG that off-takers have been seeking, finding companies prepared to commit to tolling fees for 20 years has become more challenging.[31]

This dramatic swing in oil prices has led some U.S. LNG liquefaction and export projects to re-evaluate development plans.[32] This will likely be a topic of discussion throughout 2015, as the fate of some U.S. LNG projects may rise or fall in tandem with the market price of oil. For example, on December 23, 2014, Excelerate Energy made a motion with FERC[33] to place its Lavaca Bay LNG Project proceeding

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the NYMEX." *Henry Hub*, INVESTOPIA, http://www.investopedia.com/terms/h/henry_hub.asp, archived at http://perma.cc/5SYA-JUHV (last visited Feb. 5, 2015).

29. A final investment decision is made to develop a project once a sufficient level of purchasing commitments is secured, similar to how interstate pipeline projects are financed. Vukmanovic, *supra* note 24.

30. For two articles that explain why oil prices have fallen and the global effects of that price drop, *see* E.L., *Why the oil price is falling*, THE ECONOMIST (Dec. 8, 2014, 11:50 AM), http://www.economist.com/blogs/economist-explains/2014/12/economist-explains-4?fsrc=scn/tw_ec/why_the_oil_price_is_falling, archived at http://perma.cc/TE27-R34D; Isaac Arnsdorf & Simon Kennedy, How $50 Oil Changes Almost Everything, BLOOMBERG (Jan. 7, 2015, 11:00 PM), http://www.bloomberg.com/news/2015-01-07/oil-at-40-means-boon-for-some-no-ice-cream-for-others.html, archived at http://perma.cc/6ZUA-ZXG5.

31. Vukmanovic, *supra* note 24 (internal quotations omitted). Additionally, the following article contains an infographic that illustrates the economics and pricing of U.S. LNG exports using Cheniere's Sabine Pass as an example, Zain Shauk, *U.S. Natural Gas Exports Will Fire Up in 2015*, BUSINESS WEEK (Nov. 6, 2014), http://www.businessweek.com/articles/2014-11-06/u-dot-s-dot-natural-gas-exports-will-fire-up-in-2015, archived at http://perma.cc/3Y22-5XZT.

32. Vukmanovic, *supra* note 24.

33. *See* Motion of Excelerate Liquefaction Solutions (Port Lavaca I), LLC, Excelerate Liquefaction Solutions (Port Lavaca 2), LLC, and Lavaca Bay Pipeline System, LLC to Place Lavaca Bay LNG Proceeding in Abeyance, FERC Docket Nos. CP14-71-000, CP14-72-000, and CP14-73-000 (Dec. 23, 2014).

in abeyance until April 1, 2015, based on a "strategic reconsideration of the economic value of the Project" due to declining oil prices and other "global economic conditions."[34] Whether others follow suit or can weather the oil price decline will take shape over the coming months and years.

III. THE DOE AND FERC APPROVAL PROCESSES

LNG projects in the United States require numerous federal and state authorizations before beginning construction and operation of facilities and the exportation of natural gas. This section overviews the DOE and FERC processes, which can generally be thought of as two overlapping and connected, yet individual, tracks. The DOE track governs exporting LNG to foreign countries. The FERC track governs siting, construction, operation, and expansion of LNG liquefaction and export facilities.

A. DOE Review

In this track, an applicant must file for authorization to export LNG with the DOE's Office of Oil and Gas Global Security and Supply, Division of Natural Gas Regulatory Activities, which bills itself as "the one-stop-shopping place to obtain these authorizations."[35] Applicants request long-term or blanket authorizations, or both, to export LNG to Free Trade Agreement (FTA) and/or non-FTA countries.[36] The application process is notably different based on whether the exports are destined for FTA or non-FTA countries.

The DOE's statutory mandate is based in the Natural Gas Act (NGA), Section 3b, 15 U.S.C. § 717b, which governs the export

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34. Vukmanovic, *supra* note 24.

35. *Natural Gas Regulation*, DEP'T OF ENERGY, http://energy.gov/fe/services/natural-gas-regulation (last visited Feb. 5, 2015), archived at http://perma.cc/Y8C8-T9RP.

36. The Office of Fossil Energy's Natural Gas Regulation webpage explains that

> [t]here are basically two types of authorizations, blanket and long-term authorizations. The blanket authorization enables you to import or export on a short-term or spot market basis for a period of up to two years. The long-term authorization is used when you have a signed gas purchase or sales agreement/contract, or tolling agreement, or other agreement resulting in imports/exports of natural gas, for a period of time longer than two years.

Id.

(and import) of LNG. Exports destined for FTA countries[37] are governed by Section 3b(c). That Section grants expedited approval for those applications as consistent with the public interest, though this presumption may be rebutted:

> (c) Expedited application and approval process
> For purposes of subsection (a) of this section, the importation of the natural gas referred to in subsection (b) of this section, or the exportation of natural gas to a nation with which there is in effect a free trade agreement requiring national treatment for trade in natural gas, shall be deemed to be consistent with the public interest, and applications for such importation or exportation shall be granted without modification or delay.[38]

For non-FTA nations—including such countries as Japan, India, and the European nations—the process is governed by Section 3b(a) of the NGA and is more intensive.[39] That Section states as follows:

> [N]o person shall export any natural gas from the United States to a foreign country . . . without first having secured an order of the Commission authorizing it to do so. The Commission shall issue such order upon application, unless, after opportunity for hearing, it finds that the proposed

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37. The United States has free trade agreements with 20 countries (as of the drafting of this article). Those countries are: Australia, Bahrain, Canada, Chile, Colombia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Jordan, Korea, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, and Singapore. For the most current list *see Free Trade Agreements*, OFFICE OF THE U.S. TRADE REP., http://www.ustr.gov/trade-agreements/free-trade-agreements, archived at https://perma.cc/7L6P-NGGD (last visited Feb. 5, 2015). The United States and other trade partners were negotiating the Trans-Pacific Partnership (including Japan and other Asia-Pacific countries) and the Transatlantic Trade and Investment Partnership (with the European Union) at the time this article was finalized. *See Unlocking Opportunity for Americans through trade with the Asia Pacific*, OFFICE OF THE U.S. TRADE REP., http://www.ustr.gov/tpp archived at http://perma.cc/CFP9-9SM3 (last visited Feb. 5, 2015); *see also Transatlantic Trade and Investment Partnership*, OFFICE OF THE U.S. TRADE REP., https://ustr.gov/ttip, archived at https://perma.cc/YLB8-YBZG (last visited Feb. 5, 2015).

38. 15 U.S.C. § 717b (2012).

39. While this is currently the case, a number of bills have been introduced in the United States Congress that would either grant automatic approval to exports destined for countries that are members of the World Trade Organization or put a time limit on DOE's review following FERC's environmental review determination. *See e.g.*, Jasmin Melvin, *Lawmaker renews call to bypass DOE review of LNG exports to WTO member countries*, INSIDE FERC, Jan. 19, 2015, at 15. *See also* Jasmin Melvin, *Prospects seen as promising for passage of legislation to expedite LNG exports*, INSIDE FERC, Jan. 12, 2015, at 1.

> exportation or importation will not be consistent with the public interest. The Commission may by its order grant such application, in whole or in part, with such modification and upon such terms and conditions as the Commission may find necessary or appropriate, and may from time to time, after opportunity for hearing, and for good cause shown, make such supplemental order in the premises as it may find necessary or appropriate.[40]

The Office of Fossil Energy either approves or denies the application to export LNG. "[E]xports to non-FTA countries do not enjoy the presumption [of being in the public interest], and must show that the proposed export does not threaten the security of domestic supply or market competition."[41]

The DOE changed its approval process for non-FTA countries by order on August 15, 2014. Prior to the change, in cases in which the DOE approved an application, the approval was "conditional" until FERC had completed its National Environmental Policy Act (NEPA) review. Once FERC granted its approval, DOE would undertake a final review and—assuming for purposes of this explanation—grant a final approval to export LNG. The August 15, 2014 Order suspended this policy and now the DOE will only undertake one review after FERC issues its environmental review.[42] "[A]n application is ready for final action when DOE has sufficient information on which to base a public interest determination and when DOE has completed its NEPA review."[43]

B. FERC Review

In the FERC track, an applicant requests permission to "site, construct, operate, and expand" an LNG facility, as per Sections 3b

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40. Natural Gas Act, Section 3b(a), 15 U.S.C. § 717b(a). Note that the "Commission" referred to in Section 3b(a) is the former Federal Power Commission, which was terminated in 1977 and its authority transferred to the DOE, with certain functions transferring to FERC. *See* note preceding Section 3b and *History of FERC*, FERC, http://www.ferc.gov/students/ferc/history.asp, archived at http://perma.cc/8A7N-WXL8 (last visited Mar. 6, 2015).

41. Whitney Snyder, *Cove Point: Regulators Approve Maryland LNG Import Turned Export Facility*, 4 PA. BAR ASS'N ENVTL. & ENERGY LAW SECTION NEWSLETTER 2, 2 (Dec. 2014).

42. In that order, the DOE explained the change and the rationale for it. *See* Procedures for Liquefied Natural Gas Export Decisions, 79 Fed. Reg. 48132 (Aug. 15, 2014). *See also Procedures for Liquefied Natural Gas Export Decisions*, DEP'T OF ENERGY, http://energy.gov/fe/proposed-procedures-liquefied-natural-gas-export-decisions, archived at http://perma.cc/D875-WGMD (last visited Feb. 5, 2015).

43. Procedures for Liquefied Natural Gas Export Decisions, 79 Fed. Reg. at 48132.

and 3f of the Natural Gas Act.[44] FERC's review is considered a federal action subject to NEPA.[45] An applicant must comply with Section 3b-1 regarding the NEPA pre-filing process, including beginning the pre-filing process more than 180 days prior to filing an application.[46]

The pre-filing process permits the applicant and FERC to begin a dialogue that includes FERC Requests for Information and public input opportunities.[47] The applicant works with FERC staff through the pre-filing process as detailed in 18 C.F.R. § 157.21, "pre-filing procedures and review process for LNG terminal facilities and other natural gas facilities," prior to filing an application.[48]

> The prospective applicant must make a filing containing the material identified in paragraph (d) of this section and concurrently file a Letter of Intent pursuant to 33 CFR 127.007, and a Preliminary Waterway Suitability Assessment (WSA) with the U.S. Coast Guard (Captain of the Port/Federal Maritime Security Coordinator).[49]

Section 157.21(d) lists the required contents of the applicant's filing. Those contents include information about project timelines, zoning, site availability, marine facility location, maps, federal and state agencies involved, a description of the work already done (including, *inter alia*, contacting stakeholders, engineering, and environmental surveys), and lists of prospective contractors, among other items.[50] The duration of the pre-filing process depends on the size and complexity of the project, but as previously mentioned, is no shorter than six months.[51]

At the conclusion of the pre-filing process, the applicant files to site, construct, expand, and operate LNG liquefaction and export

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44. 15 U.S.C. §§ 717b, 717f (2012). *See Pre-filing Environmental Review Process*, FERC, http://www.ferc.gov/help/processes/flow/lng-1.asp, archived at http://perma.cc/9TKX-JBMT (last visited Feb. 5, 2015) (FERC's pre-filing environmental review process in flowchart form).

45. The NEPA process "requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions." *National Environmental Policy Act (NEPA)*, ENVTL. PROT. AGENCY, http://www.epa.gov/compliance/nepa/, archived at http://perma.cc/9S88-HPKJ (last visited Feb. 5, 2015).

46. 15 U.S.C. § 717b-1(a). *See also* 18 C.F.R. §§ 153.1-23 and 380.1 (2014).

47. *Pre-filing Environmental Review Process*, *supra* note 44.

48. 18 C.F.R. § 157.21.

49. *Id*. at § 157.21(a)(1).

50. *Id.* at § 157.21(d).

51. *Id.* at § 157.21(a)(2)(i).

facilities. FERC is considered the lead agency in the review process[52] and operates with cooperating parties to issue a Notice of Intent to prepare the environmental review, which it sends to interested parties.[53] FERC then prepares a NEPA environmental review document in the form of either an environmental assessment (EA) or environmental impact statement (EIS).[54]

The EA process has a shorter timeline than an EIS and is meant for a project that generally has a footprint within an existing facility and has had an EIS review in the past.[55] "An EA is a concise public document that a federal agency may prepare to provide sufficient evidence and analysis for determining a finding of no significant impact."[56] If an EA determines that a project may have significant environmental impact, an EIS review will commence. The EIS process has a longer timeline than the EA review and is designed for a project that will be built on a new site or is expanding an existing site, and is one that may have significant environmental impact. An

52. FED. ENERGY REGULATORY COMM'N, ENVIRONMENTAL IMPACT STATEMENT, JORDAN COVE ENERGY PROJECT, L.P., AND PACIFIC CONNECTOR GAS PIPELINE, LP, FERC DOCKET NOS. CP13-483-000, CP13-492-000, 1–2 (Nov. 5, 2014), *available at* http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID =13677781, archived at http://perma.cc/2G9G-D28X ("FERC is the federal agency responsible for authorizing onshore LNG terminals and interstate natural gas transmission facilities, as specified in section 311(e)(1) of the Energy Policy Act of 2005 (EPAct) and the NGA. In accordance with section 313(b)(1) of the EPAct, the FERC is the lead federal agency for the coordination of all applicable federal authorizations, and is also the lead federal agency for preparation of this EIS.").

53. Interested parties may include elected federal, state, and local government officials, agency representatives, regional environmental and non-governmental organizations, Indian tribes, affected landowners, and local community members, libraries, and newspapers.

54. NEPA requirements and regulations are issued by the Council on Environmental Quality (CEQ) at Title 40 of the Code of Federal Regulations Parts 1500-1508, and the Commission's regulations at 18 C.F.R. Part 380. The NEPA process involves numerous cooperating parties including combinations of the following, as well as others: U.S. Department of Agriculture, Forest Service; U.S. Army Corps of Engineers; U.S. Department of Energy; U.S. Environmental Protection Agency; U.S. Department of Homeland Security, Coast Guard; Department of the Interior, Bureau of Land Management, Bureau of Reclamation, and Fish and Wildlife Service; and U.S. Department of Transportation.

55. U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-14-762, NATURAL GAS: FEDERAL APPROVAL PROCESS FOR LIQUEFIED NATURAL GAS EXPORTS (2014), *available at* http://www.gao.gov/assets/670/666177.pdf, archived at http://perma .cc/4PFV-GAMP.

56. FED. ENERGY REGULATORY COMM'N, ENVIRONMENTAL ASSESSMENT, SABINE PASS LIQUEFACTION EXPANSION, LLC, SABINE PASS LIQUEFACTION, LLC, AND SABINE PASS LNG, L.P., AND CHENIERE CREOLE TRAIL PIPELINE, L.P., FERC DOCKET NOS. CP13-552-000, CP13-553-000 5 (Dec 12. 2014), *available at* http://energy.gov/sites/prod/files/2014/12/f19/EA-1983-DEA-2014.pdf, archived at http://perma.cc/3N5X-JDJU [hereinafter ENVIRONMENTAL ASSESSMENT].

applicant may choose to undergo the EIS review without first completing an EA.

The entire application, complete with FERC staff's recommendations (which may include environmental mitigation measures to which the applicant must adhere) then goes to FERC's Commissioners, who review the record and approve or deny the application.[57] An application under the Natural Gas Act Sections 7c and 7f, 15 U.S.C. § 717c and 717f, and Part 157 of the Commission's regulations, 18 C.F.R. Part 157, may also accompany the Sections 3b and 3f application for those applicants seeking to construct interstate pipelines to bring natural gas feedstock to the facility. Section 7c mandates that the rates and charges in conjunction with the pipeline be just and reasonable.[58] Section 7f sets forth the requirement for a certificate of public convenience and necessity.[59]

IV. LNG APPROVALS IN 2014

The United States saw four LNG liquefaction and export projects approved in some form by both the DOE and FERC in 2014. Those facilities are Sabine Pass, Cameron, Cove Point, and Freeport. Numerous other projects are under review going into 2015.[60] All four approved terminals began some form of construction or related activities before the end of 2014.[61] This section provides details about those projects, including the DOE and FERC docket numbers, project histories and estimated costs, and the LNG volumes approved for export to FTA and non-FTA countries. It should be noted that the authorization to export up to a certain volume does not necessarily mean that a facility will actually export its nameplate capacity. Changing global market conditions, such as those discussed in Part II of this article, may affect actual volumes exported.[62]

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57. *Pre-filing Environmental Review Process*, *supra* note 44.

58. 15 U.S.C. § 717c (2012).

59. 15 U.S.C. § 717f. *See also* 18 C.F.R. Part 157 (2014).

60. *See North American LNG Export Terminals – Proposed*, FERC, http://www.ferc.gov/industries/gas/indus-act/lng/lng-export-proposed.pdf, archived at http://perma.cc/G97P-6E4V (last updated Feb. 5, 2015) (map listing proposed LNG terminals in North America).

61. Note that Sabine Pass had not begun construction of Trains 5 and 6 by year-end 2014. However, construction is underway on other parts of Sabine Pass, as explained in more detail *infra* Part IV.A.

62. That said, the majority of export capacity is in the form of firm contracts for 20 years—capital commitments for financing large pieces of a project are one of the reasons why a LNG project actually is built. Some contracted buyers—mainly Asian—are unloading their long-term contracts with U.S. exporters in order to lock-in lower rates from contracts indexed to crude oil

A. Sabine Pass

The Sabine Pass LNG facilities[63] are located in Cameron Parish, Louisiana.[64] Sabine Pass Liquefaction Expansion, LLC, Sabine Pass Liquefaction, LLC, Sabine Pass LNG, L.P., and Cheniere Creole Trail Pipeline, L.P. are the named applicants on the FERC filings. Sabine Pass Liquefaction, LLC is listed as the applicant on the DOE filings. The Sabine Pass Liquefaction Expansion (SPLE) Project generally consists of adding 1.4 billion cubic feet per day (Bcf/d) of liquefaction capabilities through two additional trains (Trains 5 and 6). The Cheniere Creole Trail Pipeline (CCTPL) Expansion Project will supply the additional pipeline infrastructure to bring natural gas feedstock to the facilities. Sabine Pass, including the SPLE Project, will have a nameplate liquefaction capacity of 4+ Bcf/d over six trains. Sabine Pass has been authorized to export approximately 3.5 Bcf/d to FTA countries and 2.2 Bcf/d to non-FTA countries.[65]

Sabine Pass was originally constructed as a LNG import terminal that went into service in 2009.[66] Due to domestic shale gas production, the United States went from being a net importer of natural gas to a potentially large exporter virtually overnight. Sabine Pass leveraged its existing infrastructure to become one of the first terminals to receive approval to export LNG. On April 16, 2012, FERC issued an order finding that "subject to the conditions imposed in this order, Sabine Pass Liquefaction and Sabine Pass LNG's proposals are not inconsistent with the public interest."[67]

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prices (as discussed in detail in Part II of this article). *See also* Vukmanovic, *supra* note 24.

63. *Sabine Pass Liquefaction Project*, CHENIERE, http://www.cheniere.com/sabineliquefaction/liquefactionprojects.html, archived at http://perma.cc/6PP3-VN77 (last visited Feb. 5, 2015).

64. The eastern shore of Sabine Pass is located in Louisiana. The western shore is located in Texas.

65. A full list of Sabine Pass's DOE authorizations to export LNG is found in this Part of the article.

66. Sabine LNG L.P. received FERC approval to site, construct, and operate a LNG import and regasification terminal near Sabine Pass Canal by order dated December 21, 2004. FED. ENERGY REGULATORY COMM'N, PHASE 1, SABINE PASS LNG, L.P., 109 FERC ¶ 61,324 (2004). Additional authorizations were granted in SABINE PASS LNG, L.P., 115 FERC ¶ 61,330 (2006); SABINE PASS LNG, L.P., 127 FERC ¶ 61,200 (2009).

67. FED. ENERGY REGULATORY COMM'N, ORDER GRANTING SECTION 3 AUTHORIZATION, SABINE PASS LIQUEFACTION, LLC, AND SABINE PASS LNG, L.P., FERC DOCKET NO. CP11-72-000, 139 FERC 61,039 12 (Apr. 16, 2012), *available at* http://www.ferc.gov/CalendarFiles/20120416164846-CP11-72-000.pdf, archived at http://perma.cc/Y2KM-FDTL. Also of relevance, on October 25, 2013, the applicants filed to amend the April 16, 2012 Order and on February 20, 2014, Sabine

On September 30, 2013, Sabine Pass filed an application to site, construct, and operate additional LNG liquefaction and export facilities at its existing Sabine Pass project location.[68] The SPLE Project, as mentioned above, adds Trains 5 and 6 (Stage 3) for an additional 1.4 Bcf/d of liquefaction capacity.[69] Also on September 30, 2013, Cheniere Creole Trail Pipeline filed to construct and operate a compressor station and 104.3 miles of pipeline to deliver natural gas to the liquefaction facility.[70] On December 12, 2014, FERC issued its EA for the SPLE and CCTPL Projects.[71] The EA concluded that

> the approval of the Projects would not constitute a major federal action significantly affecting the quality of the human environment. This finding is based on our environmental analysis as described above; information provided in Sabine Pass' and CCTPL's application and supplemental filings; and their implementation of our recommended mitigation measures.[72]

The EA was open for public comment until January 12, 2015, during which time several parties submitted comments. FERC's EA review, combined with numerous DOE orders that authorized Sabine Pass to export LNG to FTA and non-FTA nations, permitted Sabine Pass to begin construction on Trains 1 and 2 (Stage 1) in 2012 and Trains 3 and 4 (Stage 2) in May 2013. Those DOE approvals are as follows:

> On September 7, 2010, DOE/FE issued DOE/FE Order No. 2833, in which it authorized SPL to export LNG from the Sabine Pass LNG Terminal to FTA nations in a volume totaling 803 Bcf/yr of natural gas (2.2 Bcf per day (Bcf/d) . . . . On August 7, 2012, in DOE/FE Order No. 2961-A, DOE/FE granted final authorization to SPL to export LNG

Pass received amended authority from FERC to increase the volume of LNG it processes from 2.2 Bcf/d to 2.76 Bcf/d from Trains 1 - 4 (Stages 1 and 2). *See* FED. ENERGY REGULATORY COMM'N, ORDER AMENDING SECTION 3 AUTHORIZATION, SABINE PASS LIQUEFACTION, LLC, AND SABINE PASS LNG, L.P., FERC DOCKET NO. CP14-12-000, 146 FERC 61,117 9 (Feb. 20, 2014) *available at* https://www.ferc.gov/whats-new/comm-meet/2014/022014/C-2.pdf, archived at https://perma.cc/3P2L-MUJ2. *See also Federal Energy Regulatory Commission,* CHENIERE, http://www.cheniere.com/sabine_liquefaction/ferc_process.shtml, archived at http://perma.cc/3UUA-YYX3 (last visited Feb. 5, 2015).

68. ENVIRONMENTAL ASSESSMENT, *supra* note 56.
69. *Id.* at 1 n. 55.
70. *Id.* at 5.
71. *Id.* at 1 n. 55.
72. *Id.* at 183.

> from the Sabine Pass LNG Terminal to non-FTA countries in a volume equivalent to approximately 803 Bcf/yr of natural gas (2.2 Bcf/d). Therefore, the total, non-additive volume of LNG authorized in both DOE/FE Order No. 2833 (FTA) and No. 2961-A (non-FTA) is equivalent to 803 Bcf/yr of natural gas . . . . Most recently, DOE/FE granted SPL two additional long-term export authorizations to FTA countries. First, on July 11, 2013, in DOE/FE Order No. 3306, DOE/FE authorized SPL to export LNG in a volume equivalent to 101 Bcf/yr of natural gas . . . . Second, on July 12, 2013, in DOE/FE Order No. 3307, DOE/FE issued a similar authorization in a volume equivalent to 88.3 Bcf/yr of natural gas. SPL now requests long-term authorization to export any surplus LNG to FTA countries- specifically, any volume of natural gas produced from Trains 5 and 6 that is not already committed for export under its SPAs . . . in an amount not to exceed the equivalent of 314 Bcf/yr of natural gas. As discussed below, DOE/FE is granting that request in this Order. With this current Order, SPL now holds four FTA export authorizations in a volume of LNG not to exceed 1,306.3 Bcf/yr of natural gas (summarized in Table 1 [ ]), as well as its non-additive non-FTA authorization in DOE/FE Order No. 2961-A.[73]

Stage 1 and 2 are estimated to start processing LNG for export in the fourth quarter of 2015.[74] Trains 5 and 6 were scheduled to begin construction in the fourth quarter of 2014 and begin processing LNG

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73. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, ORDER GRANTING LONG-TERM, MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM SABINE PASS LNG TERMINAL TO FREE TRADE AGREEMENT NATIONS, FE Docket No. 13-121-LNG, Order No. 3384 (Jan. 22 2014), *available at* https://www.federalregister.gov/articles/2014/02/13/2014-03162/sabine-pass-liquefaction-llc-application-for-long-term-authorization-to-export-liquefied-natural-gas, archived at https://perma.cc/424K-BU57. Also see the January 22, 2014 Order at page 5 for the Table referenced in the above quote. The January 22, 2014 Order also states that the portion of the application related to non-FTA countries would be addressed by separate order. Jan. 22, 2014 Order at 2. As of the end of 2014, an order had not yet been issued, but see this link for the most up-to-date information: http://www.fossil.energy.gov/programs/gasregulation/authorizations/2013_applications/Sabine_Pass_Liquefaction%2C_LLC_13-121-LNG.html, archived at http://perma.cc/63EH-NEDR (last visited Jan. 11, 2015).

74. *Sabine Liquefaction Project Schedule*, CHENIERE, http://www.cheniere.com/sabine_liquefaction/project_schedule.shtml, archived at http://perma.cc/3YLL-AVQV (last visited Feb. 5, 2015).

for export in third quarter of 2018. The three stages are expected to cost approximately $10 billion.[75] Additionally,

> [t]he Sabine Pass LNG terminal will be able to operate simultaneously as a bi-directional LNG facility for both export and import service and that there is no physical limitation to simultaneous operation of the regasification capacity of the existing Sabine Pass LNG facilities and the liquefaction service capability proposed by Sabine Pass Liquefaction.[76]

B. Cameron LNG

The Cameron LNG facilities[77] are located in Hackberry/Cameron, Louisiana. Cameron LNG, LLC and Cameron Interstate Pipeline, LLC are the named applicants on the FERC filings. Cameron LNG is listed on the DOE filings. The Cameron LNG Expansion Project will create 2.33 Bcf/d of liquefaction capabilities over three trains. The DOE has approved 1.7 Bcf/d for export to FTA and non-FTA countries.[78] Additionally, the Cameron Interstate Pipeline Expansion project will add capacity to bring the necessary natural gas to the LNG facilities.[79]

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75. Maria Gallucci, *Feds Approve Fourth LNG Export Terminal Amid Growing Pressure To Case In On US Energy Boom*, INT'L BUS. TIMES (Sept. 30, 2014, 3:19 PM), http://www.ibtimes.com/feds-approve-fourth-lng-export-terminal-amid-growing-pressure-cash-us-energy-boom-1697255, archived at http://perma.cc/G276-PLVE.

76. ORDER GRANTING SECTION 3 AUTHORIZATION, *supra* note 67, at 3–4.

77. *Cameron LNG*, CAMERON LNG, http://cameronlng.com, archived at http://perma.cc/A2CU-DC3Z (last visited Feb. 5, 2015).

78. *See* DEP'T OF ENERGY, DOE/FE ORDER NO. 3059 (2012) (authorizing export to free trade countries) and DOE/FE ORDER NO. 3391 (2014) (authorizing export to non-free trade countries), FE DOCKET NO. 11-145-LNG and FE Docket No. 11-162-LNG *available at* http://energy.gov/sites/prod/files/2014/09/f18/Cameron%20ORDER.pdf, archived at http://perma.cc/YVB6-WRM9; *see also* FED. ENERGY REGULATORY COMM'N, ORDER GRANTING AUTHORIZATION UNDER SECTION 3 OF THE NATURAL GAS ACT AND ISSUING CERTIFICATES, CAMERON LNG, LLC AND CAMERON INTERSTATE PIPELINE, LLC, FERC DOCKET NOS. CP13-25-000 AND CP13-27-000, 147 FERC ¶ 61,230 2, 9–10 (June 19, 2014), *available at* http://www.ferc.gov/whats-new/comm-meet/2014/061914/C-1.pdf, archived at http://perma.cc/XM4T-Z8EQ.

79. "The proposed pipeline expansion will consist of approximately 21 miles of 42-inch-diameter pipeline that will parallel Cameron Interstate's existing pipeline." *Id.* at 12.

Cameron regasification (import) terminal began operating in 2009.[80] Like Sabine Pass, the need for Cameron as primarily a LNG import facility changed due to the increase in domestic gas production. Also, similar to Sabine Pass, Cameron leveraged its existing infrastructure to develop LNG liquefaction and export capabilities. On December 7, 2012, Cameron LNG filed an application to site, construct, and operate LNG liquefaction and export facilities at its existing import terminal.[81] The Cameron LNG Expansion Project received FERC approval to site, construct, and operate three LNG trains and an export facility by order dated June 19, 2014.[82] The approval includes 76 environmental conditions that the applicants must satisfy throughout the course of the project.[83] The Interstate Pipeline Expansion Project also received approval in the same order.[84] The Commission stated:

> We conclude in this order that, with the conditions we require, the Liquefaction Project results in only minimal environmental impacts and can be constructed and operated safely. Accordingly, we find that, subject to the conditions imposed in this order, Cameron LNG's proposals are not inconsistent with the public interest. [85]

FERC's authorization, combined with the DOE's 2012 and 2014 orders that authorized Cameron to export up to 1.7 Bcf/d of LNG to FTA nations[86] and 0.77 Bcf/d to non-FTA nations,[87] permitted

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80. On September 11, 2003, FERC issued an order granting Cameron LNG authority to regasify and store foreign-sourced LNG. FED. ENERGY REGULATORY COMM'N, CAMERON LNG, 104 FERC 61,269 (2003).

81. FERC Docket No. CP13-25-000, *supra* note 78.

82. ORDER GRANTING AUTHORIZATION UNDER SECTION 3 OF THE NATURAL GAS ACT AND ISSUING CERTIFICATES, *supra* note 78.

83. *Id.* at Appendix A.

84. Regarding the Pipeline Project, the Commission ordered that "we find, consistent with the criteria discussed in the Certificate Policy Statement and subject to the environmental discussion below, that the public convenience and necessity requires approval of Cameron Interstate's proposal, as conditioned in this order." *Id.* at 13.

85. *Id.* at 11.

86. *Id.* at 3 n. 12. *See also* DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, ORDER GRANTING LONG-TERM, MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM CAMERON LNG TERMINAL TO FREE TRADE AGREEMENT NATIONS, FE DOCKET NO. 11-45-LNG, ORDER NO. 3059 (Jan. 17, 2012), *available at* http://www.fossil.energy.gov/programs/gasregulation/authorizations/Orders_Issued_2012/ord3059.pdf, archived at http://perma.cc/LT87-4MX9.

87. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY ORDER CONDITIONALLY GRANTING LONG-TERM MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM THE CAMERON LNG TERMINAL IN CAMERON

Cameron to begin construction in October 2014. The first train is scheduled to begin processing LNG for export in late 2017.[88] Trains 2 and 3 are to be completed in 2018.[89] The facility is estimated to cost $10 billion.[90] Cameron will have the ability to both import and export natural gas once its export terminal is complete.

C. Cove Point

The Dominion Cove Point LNG facilities[91] are located in Lusby, Maryland.[92] Dominion Cove Point LNG, LP is listed as the named applicant on the FERC and DOE filings. The Cove Point Project will create 0.82 Bcf/d of liquefaction capabilities over one train. The DOE approved Cove Point to export 1.0 Bcf/d to FTA countries and 0.77 Bcf/d to non-FTA countries.[93] Additionally, Dominion's associated pipeline project will add capacity to bring natural gas feedstock to the LNG facilities.[94]

PARISH, LOUISIANA, TO NON-FREE TRADE AGREEMENT NATIONS, U.S., FE DOCKET NO. 11-162-LNG, ORDER NO. 3391, 6 (Feb. 11, 2014), *available at* http://energy.gov/sites/prod/files/2014/09/f18/Cameron%20ORDER.pdf, archived at http://perma.cc/CS5T-7964.

88. ORDER GRANTING AUTHORIZATION UNDER SECTION 3 OF THE NATURAL GAS ACT AND ISSUING CERTIFICATES, *supra* note 78, at 9.

89. *Id.*

90. Gallucci, *supra* note 75.

91. *Dominion Cove Point*, DOMINION, https://www.dom.com/corporate/what-we-do/natural-gas/dominion-cove-point, archived at https://perma.cc/ZL4H-3VYU (last visited Feb. 5, 2015).

92. *See* Snyder, *supra* note 41 (for an article with more details on the Cove Point LNG facilities).

93. FED. ENERGY REGULATORY COMM'N, ORDER GRANTING SECTION 3 AND SECTION 7 AUTHORIZATIONS, DOMINION COVE POINT LNG, LP, FERC DOCKET NO. CP13-113-000, 148 ¶ FERC 61,244, 12–13 (Sept. 29, 2014), *available at* http://www.ferc.gov/CalendarFiles/20140929192603-CP13-113-000.pdf, archived at http://perma.cc/R3V8-UZXM.

> The export volume authorized in both the FTA Order and the non-FTA Order mirror the liquefaction capacity of the Cove Point Liquefaction Project estimated at the time each application was submitted, and thus are not additive. The lesser level approved in the non-FTA Order reflects the level found in Dominion's FEED study that was submitted after the non-FTA export application.

Id. at 13 n. 40.

94. "Dominion also seeks authority under section 7(c) of the NGA and Part 157 of the Commission's regulations, to construct and operate facilities at its existing compressor station and metering and regulating (M&R) site in Fairfax County, Virginia, and at its M&R site in Loudoun County, Virginia (collectively, Virginia Facilities)." *Id.* at 3.

Cove Point began operating as an LNG import terminal in 1978, but ceased import operations in 1980.[95] It began operating again as an import terminal in 2003 when Dominion acquired it. On April 1, 2013, Cove Point LNG filed an application to site, construct, and operate LNG liquefaction and export facilities at its existing import terminal.[96] The Cove Point LNG Project received FERC approval by order dated September 29, 2014.[97] The approval includes 79 environmental conditions that the applicant must satisfy throughout the course of the project.[98] The Commission stated:

> [W]e will authorize Dominion's proposal under section 3 to construct and operate the Cove Point Liquefaction Project. We will also authorize Dominion's proposal under section 7(c) to construct and operate the Virginia Facilities. The authorizations issued to Dominion are subject to the conditions discussed below.[99]

FERC's authorization, combined with the DOE's 2011 and 2013 orders that authorized Dominion to export up to 1.0 Bcf/d of LNG to FTA nations[100] and 0.77 Bcf/d to non-FTA nations[101] permitted construction-related activities to begin in 2014. Cove Point is scheduled to start processing LNG for export in late 2017.[102] The

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95. *See* FERC DOCKET NO. CP13-113-000, *supra* note 93, at 3–4 (discussing the history and associated proceedings of this facility).

96. *Id.* at 12–13.

97. *See Dominion Cove Point*, *supra* note 91.

98. *Id.* at Appendix B.

99. *Id.* at 3.

100. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, ORDER GRANTING LONG-TERM MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM THE COVE POINT LNG TERMINAL TO FREE TRADE AGREEMENT NATIONS, FE DOCKET NO. 11-115-LNG, ORDER NO. 3019 (Oct. 11, 2011), *available at* http://www.fossil.energy.gov/programs/gasregulation/authorizations/Orders_Issued_2011/ord3019.pdf, archived at http://perma.cc/R3LU-DNE2.

101. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, ORDER CONDITIONALLY GRANTING LONG-TERM MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM DOMINION COVE POINT LNG TERMINAL TO NON-FREE TRADE AGREEMENT NATIONS, FE DOCKET NO. 11-128-LNG, ORDER NO. 3331 (Sept. 11, 2013), *available at* http://www.fossil.energy.gov/programs/gasregulation/authorizations/Orders_Issued_2013/ord3331.pdf, archived at http://perma.cc/ZAC8-T5WL.

102. *Dominion Begins Construction Activities For Cove Point LNG Export Project*, DOMINION, (Oct. 30, 2014), http://dom.mediaroom.com/index.php?s=26677&item=136953, archived at http://perma.cc/XU2J-T9Z2 [hereinafter *Dominion Begins Construction*].

> Dominion's front end engineering design (FEED) study that established design parameters and production estimates determined that the facilities will have a base LNG production capacity of 5.25 million MTPA. Dominion states that its review of production capability for

facility is estimated to cost $3.8 billion[103] and to "maintain flexibility, the liquefaction project will allow for bi-directional import or export service."[104]

D. Freeport

The Freeport LNG facilities[105] are located in Freeport, Texas. Freeport LNG Development, L.P., FLNG Liquefaction, LLC, FLNG Liquefaction 2, LLC, and FLNG Liquefaction 3, LLC are the named applicants on the FERC filings. The DOE filings list Freeport LNG Expansion LNG, L.P. and FLNG Liquefaction, LLC as the applicants. The Freeport Liquefaction Project will create 1.8 Bcf/d of liquefaction capabilities over three trains. The DOE has authorized approval to export the full 1.8 Bcf/d to FTA and non-FTA countries. Additionally, Freeport LNG Development's associated project will reconfigure some existing facilities.[106]

Freeport began operating as an LNG import and regasification terminal in 2008.[107] The Commission's September 26, 2006 order authorized an expansion of the terminal's send-out capacity from 1.5 Bcf/d to 4.0 Bcf/d.[108] On August 31, 2012, the applicants filed an application to site, construct, and operate LNG liquefaction and export facilities at the existing import terminal.[109] The Freeport

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> global liquefaction plants supports its projection that during operation, the actual capacity will exceed 5.25 million MTPA by as much as ten percent. For this reason, Dominion requests authorization to construct and operate liquefaction facilities with an LNG production capacity of up to 5.75 million MTPA.

FERC DOCKET NO. CP13-113-000, *supra* note 93, at 6 n. 16.

103. Gallucci, *supra*, note 75.

104. FERC DOCKET NO. CP13-113-000, *supra* note 93.

105. *Freeport LNG's Liquefaction and Export Project*, FREEPORT LNG, http://www.freeportlng.com/The_Project.asp, archived at http://perma.cc/4G68-L8CU (last visited Feb. 5, 2015).

106. The reconfiguration comprises three major components: reorientation of the Phase II dock; modifying the transfer facilities; and modifying the access roads at the terminal. FED. ENERGY REGULATORY COMM'N, ORDER GRANTING AUTHORIZATIONS UNDER SECTION 3 OF THE NATURAL GAS ACT, FREEPORT LNG DEVELOPMENT, L.P., FLNG LIQUEFACTION, LLC, FLNG LIQUEFACTION 2, LLC, FLNG LIQUEFACTION 3, LLC, AND FREEPORT LNG DEVELOPMENT, L.P., FERC DOCKET NOS. CP12-509-000 and CP12-29-000, 148 FERC ¶ 61,076, 3-5 (July 30, 2014), *available at* http://www.ferc.gov/CalendarFiles/20140730193435-CP12-509-000.pdf, archived at http://perma.cc/8VD8-RBNA.

107. *See id.* at 2 n. 3 (discussing the history of the Freeport LNG facilities).

108. *Freeport LNG Development, L.P.,* 116 FERC ¶ 61,290 (2006).

109. ORDER GRANTING AUTHORIZATIONS UNDER SECTION 3 OF THE NATURAL GAS ACT, *supra* note 106.

LNG Project received FERC authorization to site, construct, and operate three LNG trains and export facilities by order dated July 30, 2014.[110] The approval includes 83 environmental conditions that the applicants must satisfy throughout the course of the project.[111] The Commission stated:

> The Commission has authorized the siting, construction, and operation of Freeport LNG's existing terminal on Quintana Island through a series of orders, and the facilities have been in operation since 2008. In conditionally granting Freeport LNG long-term authorization to export LNG, DOE found that there was substantial evidence of economic and other public benefits such that the authorization was not inconsistent with the public interest. We recognize DOE's public interest findings in this order.
>
> Further, we concur with the findings set forth in the June 2014 final environmental impact statement (EIS), which concludes that construction and operation of the projects, while resulting in some significant and unavoidable impacts to residents of the Town of Quintana due to construction noise and traffic, will be temporary, and minimized with certain conditions set forth in this order. Other adverse impacts would be reduced to less than significant impacts with the implementation of mitigation measures set forth in this order. Therefore, as discussed below, we find that, subject to the conditions imposed in this order, Freeport LNG's Phase II Modification Project and Liquefaction Project are not inconsistent with the public interest.[112]

FERC's authorization, combined with the DOE's additional orders[113] that authorized Freeport to export up to 1.8 Bcf/d of LNG to FTA nations[114] and 1.8 Bcf/d to non-FTA nations,[115] permitted

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110. *Id*.

111. *See id.* at Appendix A.

112. *Id.* at 10.

113. The DOE/FE has issued three other long-term LNG export authorizations to Freeport LNG: 1) two orders authorizing exports of domestically produced LNG to FTA nations (or future FTA nations) in a volume equivalent to 1.4 Bcf/d, issued in FE Docket No. 10-160-LNG and FE Docket No. 12-06-LNG; and 2) a conditional order authorizing exports to non-FTA nations in a volume equivalent to 0.4 Bcf/d of natural gas for a term of 20 years, issued in FE Docket No. 11-161-LNG.

114. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, ORDER GRANTING LONG-TERM AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS FROM FREEPORT TERMINAL TO FREE TRADE NATIONS, FE DOCKET NO. 10-160-LNG, Order No. 2913 (Feb. 10, 2011), *available at* http://www.fossil.energy.gov/programs/gasregulation/authorizations/Orders_Issued_2011/ord2913.pdf, archived at http://perma.cc/7E6X-EJ7Y.

Freeport to begin construction on Trains 1 and 2 in 2014. Trains 1 and 2 are scheduled to start processing LNG in late 2018 and 2019, respectively.[116] Train 3 is scheduled to begin construction in mid-2015 and is scheduled for an in-service date of 2019.[117] The facility is estimated to cost $11 billion for Trains 1 and 2,[118] and will create dual import-export capabilities.

> The added liquefaction capability will not preclude the terminal from operating in vaporization and send-out mode as business conditions dictate. Also, having dual liquefaction and regasification capabilities will not result in any increase in the number of ship transits since the total amount of LNG handled, either by liquefying natural gas or by vaporizing LNG, will not exceed thresholds authorized under the FERC order approving the Phase II regas project.[119]

V. ENVIRONMENTAL, SECURITY, AND COMMUNITY CONCERNS

As with most large infrastructure and development projects, LNG liquefaction and export terminals raise a number of environmental, security, and community concerns—many of which are under consideration in some manner as part of the DOE and FERC review processes. This includes procedures that allow input from interested stakeholders and the public at large through public comment periods.

Stakeholders' concerns are diverse and require balancing project benefits with the public interest. The FERC approval process, for example, includes an environmental review, during which, interested parties have the opportunity to provide comments in response to the applicant's proposed project. Environmental mitigation measures may

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115. DEP'T OF ENERGY, OFFICE OF FOSSIL ENERGY, FINAL OPINION AND ORDER GRANTING LONG-TERM MULTI-CONTRACT AUTHORIZATION TO EXPORT LIQUEFIED NATURAL GAS BY VESSEL FROM THE FREEPORT LNG TERMINAL ON QUINTANA ISLAND, TEXAS, TO NON-FREE TRADE AGREEMENT NATIONS, FE DOCKET NO. 10-161-LNG, ORDER NO. 3282-C (Nov. 11, 2014), *available at* http://www.fossil.energy.gov/programs/gasregulation/authorizations/Orders_Issued_2013/ord3282.pdf, archived at http://perma.cc/RY22-2457. *See also* Jasmin Melvin, *Freeport LNG project clears last regulatory hurdle, secures final DOE approval of exports*, INSIDE FERC, Nov. 17, 2014 at 1.

116. *Project Status and Schedule*, FREEPORT LNG, http://www.freeportlng.com/Project_Status.asp, archived at http://perma.cc/V8X7-FP59 (last visited Feb. 5, 2015).

117. *Id.*

118. Jasmin Melvin, *Freeport LNG secures financing for Texas export project, orders construction start*, INSIDE FERC, Dec. 1, 2014, at 12.

119. *Freeport LNG's Liquefaction and Export Project*, *supra* note 105.

be developed—which can be based, at least in part, on stakeholders' comments—for the project to be approved. If an application is approved with environmental mitigation measures, the applicant must demonstrate that it will comply with those conditions to obtain approval to site, construct, and operate the facility.[120]

The remainder of this section is broadly organized into environmental, security, and community concerns. It is meant as a representative cross section of stakeholder concerns and is not meant to be an exclusive or comprehensive list. *Inclusion and/or discussion of concerns in this section do not represent the author's agreement or disagreement with those concerns.* Further, the DOE's and FERC's review processes account for these considerations to the extent that they are authorized to do so.

A. Environmental

Environmental advocates may advance a variety of arguments against natural gas infrastructure development, such as greenhouse gas (GHG) effects, disruption of sensitive ecological environs, leaks, and explosions. The Sierra Club, for example, raises concerns as to the GHG and construction impacts resulting from LNG liquefaction and export terminals. "[T]he super-cooling process that turns fossil fuel vapor into LNG requires an immense amount of energy -- so much energy, in fact, that the LNG lifecycle is as dirty as coal. The industry wants to build enormous shipping terminals that would pave over fields, fill wetlands, and destroy estuaries."[121] Environmental advocates further contend that second- and tertiary-order environmental effects will result from U.S. policy that supports exporting LNG by "incentiviz[ing] environmental damage from fracking . . . ."[122] The Sierra Club also warns that pipelines and gas wells can leak or rupture, "risking lives and fouling the environment

120. *See Public Comment Procedures*, DEP'T OF ENERGY, http://energy.gov/fe/services/natural-gas-regulation/public-comment-procedures, archived at http://perma.cc/76PQ-EDMY (last visited Feb. 5, 2015) (explaining the DOE public comment procedures).

121. *Stop LNG Exports*, SIERRA CLUB, http://content.sierraclub.org/naturalgas/stop-lng-exports, archived at http://perma.cc/PQ7P-DJC6 (last visited Feb. 5, 2015). *See also* Ari Phillips, *First East Cost Liquefied Natural Gas Terminal Approved on the Chesapeake Bay*, THINK PROGRESS (Sept. 30, 2014, 4:01 PM), http://thinkprogress.org/climate/2014/09/30/3573843/cove-point-liquefied-natural-gas-terminal-approval/, archived at http://perma.cc/5XGQ-65YX (postulating that liquefaction and export facilities may have global impacts on the climate by "possibly contribut[ing] more to global warming over the next two decades than if the Asian countries where the gas is headed burned their own coal.").

122. Phillips, *supra* note 121.

where people live and further polluting the air we breathe and the water we drink."[123]

In addressing points raised by environmental advocates—including those of the United States Environmental Protection Agency (EPA)—in a late 2014 final EIS, FERC explained why it did not adopt EPA's recommendations regarding environmental impacts of increased natural gas production and lifecycle GHG emissions. Regarding the former, the Commission quoted the DOE, stating, "it cannot meaningfully estimate where, when, or by what method any additional natural gas would be produced [and therefore,] cannot meaningfully analyze the specific environmental impacts of such production."[124] As to lifecycle GHG emissions, the Commission found that "the impacts of end use in foreign, likely non-adjacent countries is beyond the scope of a project proposed within the United States and evaluated under NEPA and White House Council on Environmental Quality regulations."[125]

Proponents of LNG liquefaction, export, and associated infrastructure advocate that pipelines are the safest method of transporting natural gas and its by-products,[126] that LNG is a safe product to ship and store (also a security concern),[127] and that a number of environmental concerns are temporary construction-related concerns. The American Petroleum Institute, for example, states, "LNG has been safely handled for several decades, with LNG vessels having made more than 100,000 voyages without major accidents or safety problems."[128]

B. Security

Concerns over U.S. and global energy security are also relevant considerations. The DOE approval process, for example, addresses the issue of exporting LNG to free trade partners as a matter of course—because it is presumed to be in the public interest—as well as to other non-FTA countries, including allies and strategic partners.

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123. *Stop LNG Exports, supra* note 121.

124. Bobby McMahon, *EPA calls on commission to bolster environmental considerations in Corpus Christi LNG review*, INSIDE FERC, Nov. 24, 2014, at 17.

125. *Id.*

126. Vern Grismshaw & John Rafuse, *Assessing America's Pipeline Infrastructure: Delivering on Energy Opportunities*, UNITED TRANSP. ADVISORS 6 (Feb. 2014), http://nouveaucorp.com/wp-content/uploads/2014/02/Pipeline-White-Paper-02.05.14.pdf?subject=whitepaper, archived at http://perma.cc/ BHW8-JUZZ.

127. *See Liquefied Natural Gas: Exports – America's Opportunity and Advantage*, AM. PETROLEUM INST., http://www.api.org/policy-and-issues/policy-items/lng-exports/liquefied-natural-gas-exports-americas-opportunity-and-advantage, archived at http://perma.cc/FXY4-TCKM (last visited Feb. 5, 2015).

128. *Id.*

Some proponents of LNG exports[129] argue that exports will stabilize world markets and provide gas to allies while simultaneously weakening those who would seek to utilize their energy resources in a manner inconsistent with global norms.

Alternatively, others advocate for either a more protectionist or nationalist policy with regard to U.S. domestic natural gas supply. Those voices range from individual consumers to multinational corporations that are in energy-intensive industries or use natural gas and/or its by-products as chemical feedstock.[130] They argue that limiting exports will help maintain low domestic natural gas prices, which will encourage U.S. manufacturing and the broader U.S. economy. "An industry trade group has identified 97 new chemical manufacturing projects underway, with some $72 billion in new investment, about half of it from overseas. And they come from far and wide: the big Dutch conglomerate, LyondellBasell, Taiwan's Formosa Plastics, Russia's EuroChem."[131] Exporting gas, they argue, will drive prices up and "risk smothering a U.S. manufacturing revival."[132]

C. Community

Community concerns are woven into the environmental and security issues discussed in the previous two subsections. Communities may be concerned how pipeline and LNG liquefaction and export infrastructure will affect their local communities and, on a macro level, the planet at large. They are also concerned with the availability of ample domestic supply in order to maintain relatively stable, low prices to help consumers' wallets and drive the broader economic recovery. Further, communities may be interested in local investment in manufacturing, production, construction, services, and other sectors—more simply, investment in skilled jobs based in the United States.

The United States Energy Information Agency, in a report released on October 29, 2014, concluded that LNG exports would

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129. *See, e.g.*, Charles K. Ebinger & Govinda Avasarala, *The Case for U.S. Liquefied Natural Gas Exports*, BROOKINGS INST. (Feb. 2013), http://www.brookings.edu/research/articles/2013/02/us-lng-exports-ebinger-avasarala, archived at http://perma.cc/2KJY-8CFH.

130. *See, e.g.,* Charles R. Morris, *The Case Against Natural Gas Exports*, REUTERS (Aug. 19, 2013), http://blogs.reuters.com/great-debate/2013/08/18/the-case-against-natural-gas-exports/, archived at http://perma.cc/8ZSW-9SCN.

131. *Id.*

132. *Id.* U.S. Senator Edward Markey of Massachusetts stated that the United States will be "exporting our manufacturing jobs along with the fuel." Ebinger & Avasarala, *supra* note 129.

have a modest impact on domestic natural gas prices, causing them to rise between 4% and 11%, depending on the volume exported under three different scenarios.[133] "But modestly higher domestic gas and electricity prices brought on by an increase in exports of LNG would be offset by the macroeconomic benefits of increased energy production."[134] In other words, as the argument goes, a rising tide would lift all ships.[135] The permutations of considerations that would cause one to support or oppose LNG liquefaction and export terminals are myriad and illustrate some of the many reasons why stakeholders may become involved in public comment processes. These examples also demonstrate why it may be challenging to neatly categorize one as a supporter or opponent of LNG liquefaction and export projects and policies.

CONCLUSION

For the last 40 years, and the last ten in particular, the U.S. energy outlook has been (and will continue to be) a dynamic space, due in large part to natural gas, as projections and investments are revised based on technology, policies and laws, economic and market drivers, and environmental, security, and community concerns. This article has explored a number of those considerations in the context of changing U.S. LNG prospects, as well as aiding understanding of the underlying concepts and federal approval processes.

The growth of U.S. domestic natural gas production has inverted an entire industry—and energy procurement strategy—that was predicated on importing increasing amounts of LNG over the coming decades. In its place, an exporting leviathan is progressing toward playing a major role in developing natural gas as a truly global commodity. 2014 saw four U.S. LNG liquefaction and export terminals receive DOE and FERC approvals to begin siting, constructing, expanding, and operating LNG terminals and exporting

133. *See Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*, ENERGY INFO. AGENCY (Oct. 29, 2014), http://www.eia.gov/analysis/requests/fe/, archived at http://perma.cc/7SSB-F5RY.

134. Jasmin Melvin, *Domestic gas market somewhat insensitive to increases in LNG exports, EIA chief says*, INSIDE FERC, Nov. 10, 2014, at 14.

135. A review of a NERA Economic Consulting report from 2012 stated that as exports increase the net U.S. economic benefits increased correspondingly. Alex Forbes, *Exporting a revolution: why the US LNG stampede will change the gas business forever (part 2)*, ENERGY POST (Oct. 15, 2014), http://www.energypost.eu/exporting-revolution-us-lng-stampede-will-change-gas-business-forever-part-2/, archived at http://perma.cc/YN93-8939.

LNG. A host of additional projects are wending through the approval processes as of the start of 2015.

Investments in LNG exports, however, are not immune from market forces. With oil prices forecasted to remain low through at least the first half of 2015, U.S. LNG projects may continue to be vulnerable to those pressures. As the world energy outlook evolves over the coming months and years, it will be important for governments, industry, investors, and communities to consider overreliance on any one energy source against the importance of a diverse basket of energy resources. In that sense, LNG will play a key role in meeting growing global energy demand, and also as a bridge to further renewable energy developments.